

INSPEC

3/4 INSPEC - (C) INSPEC

AN : 5842329
ABN : C9804-6150C-003
TI : Parallelization of IP-packet filter rules.
AU : Mieie T; Maruyama M; Ogura T; Takahashi N
ED : Goscinski A; Hobbs M; Zhou W
OS : Software Labs.; Nippon Telegraph & Telephone Co.; Tokyo; Japan
SO : 1997 3rd International Conference on Algorithms and Architectures for
Parallel Processing. ICA/sup 3/PP 97 (IEEE Cat. No.97TH8324), pp.
381-388, Published: Singapore, 1997, xiii+765 pp.
PU : World Scientific
CP : Singapore
DT : PA (Conference Paper)
LA : English
NU : ISBN 0780342291
PY : 1997
CONF : 1997 3rd International Conference on Algorithms and Architectures for
Parallel Processing. ICA3PP 97 (IEEE Cat. No.97TH8324), Melbourne,
Vic., Australia, 10-12 Dec. 1997, Sponsored by: Deakin Univ, IEEE
Victorian Sect
CPN : 0 7803 4229 1/97/ \$10.00
AB : A compiler for parallelizing IP-packet filter rules is presented
which will improve network security and reduce packet-forwarding
performance degradation. It analyzes the interdependence of
packet-filtering rules specified by a network administrator and
translates them into an intermediate program whose instructions can
be executed in parallel. Three types of compiler operations are
introduced: division is used to divide the rules into parallel
expressions, simplification is used to simplify redundant rules,
deletion is used to delete infeasible rules. (9 Ref.)
IT : parallelising compilers; security of data
ST : IP-packet filter rules parallelisation; compiler; network security;
packet-forwarding performance degradation; infeasible rules
TC : PR (Practical)
CC : C6150C Compilers, interpreters and other processors;
C6110P Parallel programming;
C6130S Data security
CPR : Copyright 1998, IEE

4/4 INSPEC - (C) INSPEC

AN : 5541662
ABN : B9705-6210L-075; C9705-6130S-021
TI : Performance optimization of Internet firewalls.
AU : Chiueh T; Ballman A
OS : Dept. of Comput. Sci.; State Univ. of New York; Stony Brook; NY; USA
SO : Proceedings of the SPIE - The International Society for Optical
Engineering, vol.2915, pp. 168-173, 1997
PU : SPIE-Int. Soc. Opt. Eng
CP : USA
DT : PA (Conference Paper); J (Journal Paper)
LA : English
JC : PSISDG
NU : ISSN 0277-786X
PY : 1997

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CP : USA
DT : PA (Conference Paper); J (Journal Paper)
LA : English
JC : PSISDG
NU : ISSN 0277-786X
PY : 1997
CONF : Video Techniques and Software for Full-Service Networks, Boston, MA, USA, 21 Nov. 1996, Sponsored by: SPIE
CPN : 0 8194 2317 3/97/ \$10.00
SI : 0277-786X(1997)2915L.168:POIF;1-Y
AB : Internet firewalls control the data traffic in and out of an enterprise network by checking network packets against a set of rules that embodies an organization's security policy. Because rule checking is computationally more expensive than routing-table look-up, it could become a potential bottleneck for scaling up the performance of IP routers, which typically implement firewall functions in software. In this paper, we analyzed the performance problems associated with firewalls, particularly packet filters, propose a good connection cache to amortize the costly security check over the packets in a connection, and report the preliminary performance results of a trace-driven simulation that shows the average packet check time can be reduced by a factor of 2.5 at the least. (4 Ref.)
IT : cache storage; data privacy; Internet; optimisation; security of data; telecommunication network routing; telecommunication traffic
ST : performance optimization; Internet firewalls; data traffic; enterprise network; network packets; security policy; rule checking; IP routers; packet filters; connection cache; trace-driven simulation
TC : AP (Applications); TM (Theoretical/Mathematical)
CC : B6210L Computer communications;
B0260 Optimisation techniques;
C6130S Data security;
C1180 Optimisation techniques;
C5620W Other computer networks
CPR : Copyright 1997, IEE

Search statement 17

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1/4 INSPEC - (C) INSPEC

AN : 6492808
TI : State resolved reaction rates of the spin-forbidden predissociation of N2O: A quantum dynamics study of the rotational effect.

1/14 INSPEC - (C) INSPEC

AN : 6670927

ABN : B2000-09-6150P-031; C2000-09-6130S-084

TI : Algorithms for improving the dependability of firewall and filter rule lists.

AU : Hazelhurst S; Attar A; Sinnappan R

OS : Dept. of Comput. Sci.; Univ. of the Witwatersrand; Johannesburg; South Africa

SO : Proceeding International Conference on Dependable Systems and Networks. DSN 2000, pp. 576-585, Published: Los Alamitos, CA, USA, 2000, xxiv+654 pp.

PU : IEEE Comput. Soc

CP : USA

DT : PA (Conference Paper)

LA : English

NU : ISBN 0769507077

PY : 2000

CONF : Proceeding International Conference on Dependable Systems and Networks. DSN 2000, New York, NY, USA, 25-28 June 2000, Sponsored by: IEEE Comput. Soc. Tech. Committee on Fault-Tolerant Comput., IFIP Working Group 10.4 on Dependable Comput. & Fault Tolerance, AT&T, Lucent Technol., Compaq Comput. Corp., Georgia Inst. Technol., IBM Corp., LAAS-CNRS, Microsoft Corp

CPN : 0 7695 0707 7/2000/ \$10.00

AB : Network firewalls and routers use a rule database to decide which packets will be allowed from one network on to another. By filtering packets, the firewalls and routers can improve security and performance. However, as the size of the rule list increases, it becomes difficult to maintain and validate the rules, and lookup latency may increase significantly. Both these factors tend to limit the ability of firewall systems to protect networks. This paper presents a new technique for representing rule databases. This representation (based on ordered binary decision diagrams) can be used in two ways: faster lookup algorithms can allow larger rule sets to be used without sacrificing performance; and algorithms for validating rule sets and changes to rule sets can be used. The overall dependability of the system is improved by allowing larger and more sophisticated rules sets, and by having greater confidence in the rule sets' correctness. (11 Ref.)

IT : authorisation; binary decision diagrams; filters; packet switching; reliability; table lookup; telecommunication computing; telecommunication network routing; telecommunication security

ST : network firewalls; network routers; rule database representation; packet filtering; security; performance; dependability; firewall rule lists; filter rule lists; rule maintenance; rule validation; lookup latency; network protection; ordered binary decision diagrams; lookup algorithms; rule set changes; rules set size

TC : PR (Practical)

CC : B6150P Communication network design and planning;

B6150C Communication switching;

C6130S Data security;

C6130 Data handling techniques;

C5620 Computer networks and techniques;

C7410F Communications computing

CPR : Copyright 2000, IEE

2/14 INSPEC - (C) INSPEC

AN : 6559177

ABN : B2000-05-6150-024

TI : A modular approach to packet classification: algorithms and results.

AU : Woo TYC

SO : Proceedings IEEE INFOCOM 2000. Conference on Computer Communications. Nineteenth Annual Joint Conference of the IEEE Computer and Communications Societies (Cat. No.00CH37064), Pt. vol.3, pp. 1213-1222 vol.3, Published: Piscataway, NJ, USA, 2000, 3 vol.(xxvi+1826) pp.

PU : IEEE

CP : USA

DT : PA (Conference Paper)

LA : English

NU : ISBN 0780358805

PY : 2000

CONF : Proceedings IEEE INFOCOM 2000. Conference on Computer Communications. Nineteenth Annual Joint Conference of the IEEE Computer and Communications Societies (Cat. No.00CH37064), Tel Aviv, Israel, 26-30 March 2000, Sponsored by: IEEE Comput. Soc., IEEE Commun. Soc

CPN : 0 7803 5880 5/2000/ \$10.00

AB : The ability to classify packets according to pre-defined rules is critical to providing many sophisticated value-added services, such as security, QoS, load balancing, traffic accounting, etc. Various approaches to packet classification have been studied in the literature with accompanying theoretical bounds. Practical studies with results applying to large number of filters (from 8K to 1 million) are rare. In this paper, we take a practical approach to the problem of packet classification. Specifically, we propose and study a novel approach to packet classification which combines a heuristic tree search with the use of filter buckets. Besides high performance and a reasonable storage requirement, our algorithm is unique in the sense that it can adapt to the input packet distribution by taking into account the relative filter usage. To evaluate our algorithms, we have developed realistic models of large scale filter tables, and used them to drive extensive experimentation. The results demonstrate the practicality of our algorithms for up to even 1 million filters. (9 Ref.)

IT : digital filters; divide and conquer methods; packet switching; search problems; tree data structures

ST : packet classification; pre-defined rules; value-added services; security; QoS; load balancing; traffic accounting; heuristic tree search; filter buckets; input packet distribution; realistic models; large scale filter tables; divide and conquer approach

TC : PR (Practical); TM (Theoretical/Mathematical); XP (Experimental)

CC : B6150 Communication system theory;
B0250 Combinatorial mathematics;
B1270F Digital filters;
B6140B

CPR : Copyright 2000, IEE

3/14 INSPEC - (C) INSPEC

3/14 INSPEC - (C) INSPEC

AN : 6559176
ABN : B2000-05-6150P-027; C2000-05-5620W-056
TI : Detecting and resolving packet filter conflicts.
AU : Hari A; Suri S; Parulkar G
OS : AT&T Bell Labs.; Holmdel; NJ; USA
SO : Proceedings IEEE INFOCOM 2000. Conference on Computer Communications.
Nineteenth Annual Joint Conference of the IEEE Computer and
Communications Societies (Cat. No.00CH37064), Pt. vol.3, pp.
1203-1212 vol.3, Published: Piscataway, NJ, USA, 2000, 3
vol.(xxvi+1826) pp.
PU : IEEE
CP : USA
DT : PA (Conference Paper)
LA : English
NU : ISBN 0780358805
PY : 2000
CONF : Proceedings IEEE INFOCOM 2000. Conference on Computer Communications.
Nineteenth Annual Joint Conference of the IEEE Computer and
Communications Societies (Cat. No.00CH37064), Tel Aviv, Israel, 26-30
March 2000, Sponsored by: IEEE Comput. Soc., IEEE Commun. Soc
CPN : 0 7803 5880 5/2000/ \$10.00
AB : Packet filters are rules for classifying packets based on their
header fields. Packet classification is essential to routers
supporting services such as quality of service (QoS), virtual private
networks (VPNs), and firewalls. A filter conflict occurs when two or
more filters overlap, creating an ambiguity in packet classification.
Current techniques for resolving filter conflicts are based on
prioritizing conflicting filters, and choosing the higher priority
filter. We show that such ordering does not always work. Instead, we
propose a new scheme for conflict resolution, which is based on the
idea of adding resolve filters. Our main results are algorithms for
detecting and resolving conflicts in a filter database. We have tried
our algorithm on 3 existing firewall databases, and have found
conflicts, which are potential security holes, in each of them. (13
Ref.)
IT : database management systems; filtering theory; Internet; packet
switching; telecommunication network routing; telecommunication
security
ST : packet filter conflicts; packet classification; header fields;
routers; quality of service; QoS; virtual private networks; VPN;
firewalls; conflicting filters; conflict resolution; resolve filters;
filter database; firewall databases; security holes
TC : AP (Applications); TM (Theoretical/Mathematical)
CC : B6150P Communication network design and planning;
B6210L Computer communications;
B6150C Communication switching;
C5620W Other computer networks;
C6160 Database management systems (DBMS)
CPR : Copyright 2000, IEE

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NU : ISSN 0277-786X
PY : 1997

